

We claim:

1. A backlight system comprising:
  - a) a light guide defining a back surface;
  - b) a light source optically connected to the light guide, the light source emitting light into the light guide; and
  - c) a back reflector proximate the back surface of the light guide, the back reflector comprising a multilayer optical film which reflects at least about 80% of normal light and at least about 80% of light incident at an angle of 60 degrees from normal.
2. A backlight system according to claim 1, wherein the back reflector reflects at least about 90% of normally incident light.
3. A backlight system according to claim 1, wherein the back reflector reflects at least about 95% of normally incident light.
4. A backlight system according to claim 1, wherein the back reflector reflects at least about 98% of normally incident light.
5. A backlight system according to claim 1, wherein the back reflector reflects at least about 99% of normally incident light.
6. A backlight system according to claim 1, wherein the back reflector reflects at least about 90% of the light incident at an angle of 60 degrees from normal.
7. A backlight system according to claim 1, wherein the back reflector reflects
8. A backlight system according to claim 1, wherein the back reflector reflects at least about 98% of the light incident at an angle of 60 degrees from normal.

9. A backlight system according to claim 1, wherein the back reflector reflects at least about 99% of the light incident at an angle of 60 degrees from normal.

10. A backlight system according to claim 1, further comprising diffusing means for diffusing light reflected from the back reflector towards the back surface of the light guide.

11. A backlight system according to claim 10, wherein the diffusing means comprises diffusing particles within at least one layer of the multilayer optical film.

12. A backlight system according to claim 10, wherein the diffusing means comprises diffusing particles located on a surface of the multilayer optical film.

13. A backlight system according to claim 10, wherein the diffusing means comprises a diffusing film located between the back reflector and the back surface of the light guide.

14. A backlight system according to claim 1, wherein the back surface of the light guide is formed by the back reflector.

15. A backlight system according to claim 1, further comprising a lamp cavity reflector located about at least a portion of the light source, the lamp cavity reflector directing light from light source generally towards an edge of the light guide, the lamp cavity reflector further comprising a multilayer optical film which reflects at least about 80% of normal light and at least about 80% of light incident at an angle of 60 degrees from normal.

17. A backlight system according to claim 15, wherein the lamp cavity reflector reflects at least about 95% of normally incident light.

18. A backlight system according to claim 15, wherein the lamp cavity reflector reflects at least about 98% of normally incident light.

19. A backlight system according to claim 15, wherein the lamp cavity reflector reflects at least about 99% of normally incident light.

20. A backlight system according to claim 15, wherein the lamp cavity reflector reflects at least about 90% of the light incident at an angle of 60 degrees from normal.

21. A backlight system according to claim 15, wherein the lamp cavity reflector reflects at least about 95% of the light incident at an angle of 60 degrees from normal.

22. A backlight system according to claim 15, wherein the lamp cavity reflector reflects at least about 98% of the light incident at an angle of 60 degrees from normal.

23. A backlight system according to claim 15, wherein the lamp cavity reflector reflects at least about 99% of the light incident at an angle of 60 degrees from normal.

24. A backlight system comprising:  
a) a light guide defining a back surface;

c) a back reflector proximate the back surface of the light guide, the back reflector comprising a multilayer optical film which reflects at least about 90% of normal light and at least about 80% of light incident at an angle of 60 degrees from normal; and

d) a lamp cavity reflector located about at least a portion of the light source, the lamp cavity reflector directing light from light source generally towards an edge of the light guide, the lamp cavity reflector further comprising the multilayer optical film.

25. A backlight system according to claim 24, further comprising diffusing means for diffusing light reflected from the back reflector towards the back surface of the light guide.

26. A backlight system according to claim 1, wherein the multilayer optical film further comprises:

(a) a first layer comprising an oriented birefringent polymer, the first layer having an average thickness of not more than about 0.5 microns; and

(b) a second layer of a selected second polymer, each second layer having an average thickness of not more than 0.5 microns.

27. A backlight system according to claim 26, wherein the first layer of the multilayer optical film comprises a crystalline naphthalene dicarboxylic acid polyester.

28. A backlight system according to claim 26, wherein the multilayer optical film comprises a plurality of the first and second layers, wherein one of the second layers is located between each adjacent pair of first layers.

layers of the multilayer optical film are adhered to each other

30. A backlight system according to claim 26, wherein the multilayer optical film comprises at least fifty of each of the first and second layers.

31. A backlight system according to claim 26, wherein the oriented birefringent polymer has been stretched in at least two in-plane directions.

32. A backlight system according to claim 26, wherein the oriented birefringent polymer is more birefringent than the second polymer, and further wherein the refractive index of one polymer is higher than the other polymer.

33. A backlight system according to claim 32, wherein the higher index of refraction is at least 0.05 higher.

34. A backlight system according to claim 32, wherein the higher index of refraction is at least 0.10 higher.

35. A backlight system according to claim 32, wherein the higher index of refraction is at least 0.20 higher.

36. A backlight system according to claim 27, wherein the naphthalene dicarboxylic acid polyester is a poly(ethylene naphthalate).

37. A backlight system according to claim 27, wherein the naphthalene dicarboxylic acid polyester is a copolyester comprising naphthalate units and terephthalate units.

38. A backlight system according to claim 27, wherein the second polymer is a

39. A backlight system according to claim 38, wherein the second polymer comprises naphthalene units.

40. A backlight system according to claim 38, wherein the second polymer is a copolyester comprising naphthalate units and terephthalate units.

41. A backlight system according to claim 27, wherein the second polymer is a polystyrene.

42. A backlight system according to claim 27, wherein the second polymer is a fluoropolymer.

43. A backlight system according to claim 27, wherein the second polymer is a polyacrylate, polymethacrylate, or polyolefin.

44. A backlight system comprising:

- a) a light guide defining a back surface;
- b) a light source optically connected to the light guide, the light source emitting light into the light guide;
- c) a back reflector proximate the back surface of the light guide, the back reflector comprising a multilayer optical film which reflects at least about 90% of normal light and at least about 80% of light incident at an angle of 60 degrees from normal, the multilayer optical film further comprising:
  - (1) a first layer comprising a biaxially oriented birefringent polymer, the first layer having an average thickness of not more than about 0.5 microns; and
  - (2) a second layer of a selected second polymer, each second layer having an average thickness of not more than 0.5 microns; and
- d) a lamp cavity reflector located about at least a portion of the light source, the lamp cavity reflector directing light from light source generally towards

45. A backlight system comprising:
- a) a light guide defining a back surface;
  - b) a light source optically connected to the light guide, the light source emitting light into the light guide; and
  - c) a lamp cavity reflector located about at least a portion of the light source, the lamp cavity reflector directing light from light source generally towards an edge of the light guide, the lamp cavity reflector further comprising a multilayer optical film which reflects at least about 80% of normal light and at least about 80% of light incident at an angle of 60 degrees from normal.
46. A backlight system according to claim 45, wherein the lamp cavity reflector reflects at least about 90% of normally incident light.
47. A backlight system according to claim 45, wherein the lamp cavity reflector reflects at least about 95% of normally incident light.
48. A backlight system according to claim 45, wherein the lamp cavity reflector reflects at least about 98% of normally incident light.
49. A backlight system according to claim 45, wherein the lamp cavity reflector reflects at least about 99% of normally incident light.
50. A backlight system according to claim 45, wherein the lamp cavity reflector reflects at least about 90% of the light incident at an angle of 60 degrees from normal.
51. A backlight system according to claim 45, wherein the lamp cavity reflector

52. A backlight system according to claim 45, wherein the lamp cavity reflector reflects at least about 98% of the light incident at an angle of 60 degrees from normal.

53. A backlight system according to claim 45, wherein the lamp cavity reflector reflects at least about 99% of the light incident at an angle of 60 degrees from normal.